Name: Key

Date: _____

UNIT 7

LESSON 6

AIM: DIRECTED LINE SEGMENTS + MIXED REVIEW!

RECALL: DIRECTED LINE SEGMENT FORMULA-

$$\left(x_1 + \left(\frac{K}{\quad}\right)(x_2 - x_1),\ y_1 + \left(\frac{K}{\quad}\right)(y_2 - y_1)\right)$$

1. Determine the point P that partitions the directed line segment $\overline{AB}$ into a ratio of 3:1, where A (1,-5) and B (9,-1).

$x_1\ y_1$ $x_2\ y_2$

$K = \frac{3}{4}$

$\left(1 + \frac{3}{4}(9-1),\ -5 + \frac{3}{4}(-1--5)\right)$

$(7, -2)$

2. The point P divides $\overline{AB}$ into a ratio of 4:1, where $AP > BP$. If $A(-9,-5)$ and $B(11,-2)$, where is *P*?

$x_1\ y_1$ $x_2\ y_2$

(1) $\left(7, -2\frac{3}{5}\right)$

(2) $\left(6, -\frac{1}{4}\right)$

(3) $\left(-4, -3\frac{1}{4}\right)$

(4) $\left(-5, -3\frac{3}{5}\right)$

$K = \frac{4}{5}$

$\left(-9 + \frac{4}{5}(11--9),\ -5 + \frac{4}{5}(-2--5)\right)$

$\left(7, -\frac{13}{5}\right) \rightarrow \left(7, -2\frac{3}{5}\right)$

math → Dec → enter

-2.6

↳ math → enter → enter = $\frac{3}{5}$

3. Segment CD has point E located on it such that CE:ED = 3:5. If the endpoints are located at $C(-5,-6)$ and $D(11,18)$ then find the coordinates of E. Show how you arrived at your answer.

$x_1\ y_1$ $x_2 y_2$

$K = \frac{3}{8}$

$\left(-5 + \frac{3}{8}(11--5),\ -6 + \frac{3}{8}(18--6)\right)$

$(1, 3) = E$

Oh no! One of the students won't be in class tomorrow because they did something wrong! Your job is to find out who did what and where! Solve each problem to eliminate that suspect, crime or location to find out who the *culprit* is that will end up in Mr. Gomez's office!

Suspects	Crime	Location

	Akeel	chris
X	Shayna	Brendan
X	Julie	Dom
X	James	kenny

X	Going to the bathroom and never coming back
	Being late to class
X	Texting during class
X	Snapchatting during class

	Classroom
X	Cafeteria
X	Auditorium
X	Ledge
X	Main Office

Final Answer

The Suspect Akeel

The Crime Being late to class

The Location Classroom

Clue #1

1. State the equation of a line parallel to $3y = 2x + 12$.

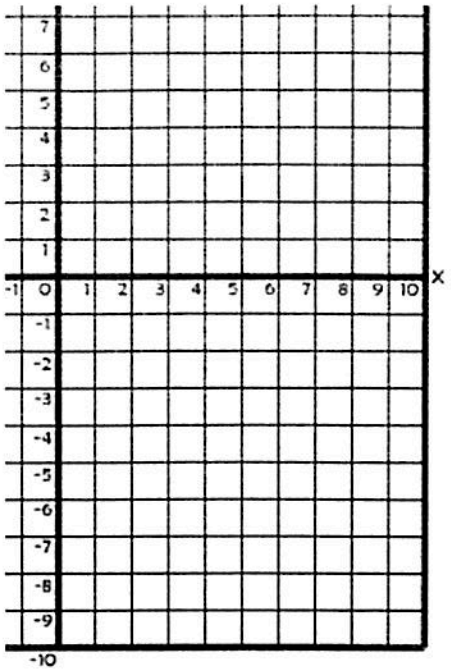
$\frac{3y}{3} = \frac{2x}{3} + \frac{12}{3}$

$y = \frac{2}{3}x + 4$

$m = \frac{2}{3}$ $\quad \parallel m = \frac{2}{3}$

1.	$y = \frac{2}{3}x + 6$	The crime did not take place on the ledge.
~~2.~~	$y = 2x + 6$	Julie did not commit the crime.
~~3.~~	$y = \frac{3}{2}x + 8$	The crime was not going to the bathroom and never coming back.
~~4.~~	$y = -\frac{3}{2}x + 4$	The crime was not snapchatting during class.

Clue #2



Determine the point P that partitions the directed line segment $\overline{AB}$ into a ratio of 1:3, where A (2,6) and B (6,-10).

$K = \frac{1}{4}$ $x_1 y_1$ $x_2 y_2$

$\left(2 + \frac{1}{4}(6-2), 6 + \frac{1}{4}(-10-6)\right)$

$(3, 2)$

1) (2,3)	The crime was not texting in class.
2) (−3,2)	Shayna did not commit the crime.
3) (3,2)	The crime was not in cafeteria.
4) (−2,3)	Julie did not commit the crime.

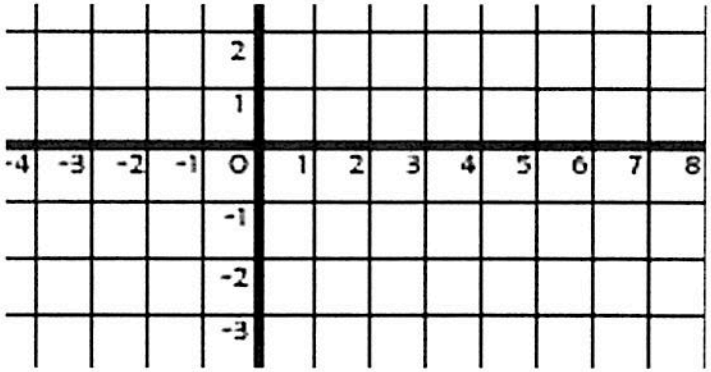
Clue #3

Find the coordinate of point P that lies along the directed segment from C(-3,-2) to D(6,1) and partitions the segment in the ratio 2 to 1.

$x_1\ y_1 \quad x_2\ y_2$

$K=\frac{2}{3} \quad \left(-3+\frac{2}{3}(6--3), -2+\frac{2}{3}(1--2)\right)$

$(3, 0)$



1)	(-3,0)	James did not commit the crime.
2)	(3,1)	The crime was not on the ledge.
3)	(3,0)	The crime did not happen in the main office.
4)	(0,3)	The crime was not in the gym.

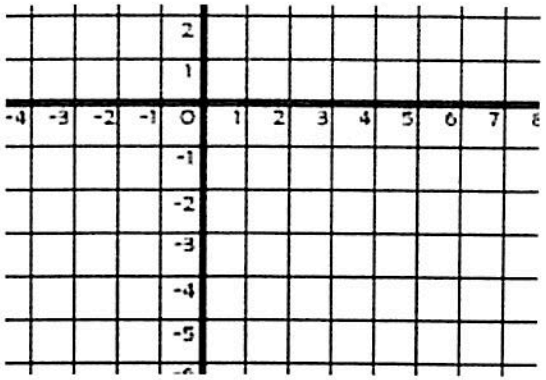
Clue #4

$x_1\ y_1 \quad x_2\ y_2$

Find the coordinate of point P that lies along the directed segment from R(-3,-4) to S(5,0) and partitions the segment in the ratio 1 to 3.

$k = \frac{1}{4}$ $\left(-3 + \frac{1}{4}(5 - -3), -4 + \frac{1}{4}(0 - -4)\right)$

$(-1, -3)$



1) (5,5)	The crime did not happen in the gym.
2) $(-3,-1)$	The crime was not in the cafeteria.
3) $(-1,-3)$	James did not commit the crime.
4) (1,3)	The crime was not in a classroom.

Clue #5

Segment RS has endpoints a $R(5, -3)$ and $S(5,13)$. Point Q lies on RS such that RQ:QS = 3:1. Which of the following must be the coordinates of Q?

$x_1\ y_1$ $x_2\ y_2$

$K = \frac{3}{4}$

$\left(5 + \frac{3}{4}(5-5), -3 + \frac{3}{4}(13-3)\right)$

$(5, 9)$

1) (5,1)	Akeel did not commit the crime.
2) (17,3)	The crime was not in the auditorium.
3) (5,9)	Shayna did not commit the crime.
4) (6,4)	The crime was not snapchatting during class.

Clue #6

Segment EF has endpoints at $E(-7,14)$ and $F(11,5)$. Point P lies on EF such that EP:PF = 2:7, find the coordinate of point P.

$x_1\ y_1$ $x_2\ y_2$

$\left(-7+\frac{2}{9}(11-7),\ 14+\frac{2}{9}(5-14)\right)$

$K=\frac{2}{9}$

$(-3, 12)$

1) (11,12)	Shayna did not commit the crime.
2) (3,12)	The crime was not coming late to class.
(3) (-3,12)	The crime was not snapchatting during class.
4) (12,-3)	Akeel did not commit the crime.

Clue #7

Segment AB has endpoints at $A(-4,-8)$ and $B(10,13)$. If point P lies on AB such that AP:BP = 2:5, the find the coordinates of P. Show all your work.

$x_1\ y_1$ $x_2\ y_2$ $k=\frac{2}{7}$

$\left(-4+\frac{2}{7}(10-4),\left(-8+\frac{2}{7}(13-8)\right)\right.$

$(0,-2)$

1) (8,13)	The crime did not happen in the auditorium.
2) (2,0)	Akeel did not commit the crime.
3) (0,-2)	The crime was not going to the bathroom and never coming back.
4) (0,2)	The crime was not texting in class.

Clue #8

$x_1 y_1$ $x_2 y_2$

Segment GH has endpoints at $G(-4,9)$ and $H(8,3)$. Point J lies on GH inbetween G and H such that GJ:JH = 1:3. Find the coordinates of J. Find the coordinates of J.

$K = \frac{1}{4}$

$\left(-4 + \frac{1}{4}(8 - -4), 9 + \frac{1}{4}(3 - 9)\right)$

$\left(-1, \frac{15}{2}\right)$ or $(-1, 7.5)$

1) (1,7.5)	The crime was not going to the bathroom and never coming back.
2) (7.5 ,-1)	The crime was not in the cafeteria.
3) (3,2)	Akeel did not commit the crime.
4) (-1, 7.5)	Julie did not commit the crime.

Clue #9

Which equation represents a line parallel to the line whose equation is $2y - 5x = 10$ and passes through the point $(2,7)$? $x_1 \; y_1$

$y - 7 = \frac{5}{2}(x-2)$

$2y = 5x + 10$

$y = \frac{5}{2}x + 5$

1) $y-7=-\frac{2}{5}(x-2)$	The crime was not being late to class.
2) $y-7=\frac{5}{2}(x-2)$	The crime was not in the auditorium.
3) $y+7=\frac{5}{2}(x+2)$	The crime was not snapchatting during class.
4) $y+7=-\frac{2}{5}(x+2)$	The crime was not going to the bathroom and never coming back.

Clue #10

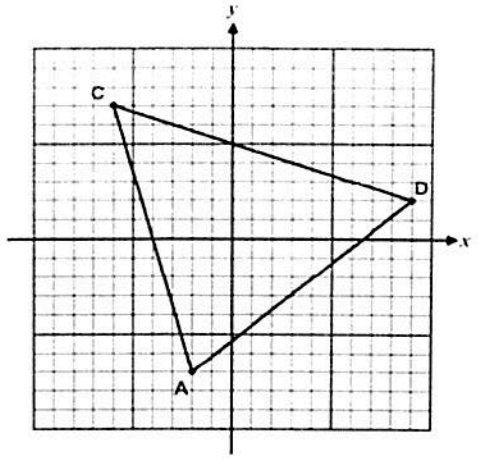
$x_1 y_1 \quad x_2 y_2$

In the diagram shown, ΔADC has vertices $A(-2,-7)$, $D(9,2)$, and $C(-6,7)$. What is the slope of the altitude drawn from C to $\overline{AD}$?

⊥ slope

$m\overline{AD} = \frac{2-(-7)}{9-(-2)} = \frac{9}{11}$

$\perp m = -\frac{11}{9}$



1) $-\frac{11}{9}$	The crime was not texting during class.
2) $\frac{11}{9}$	James did not commit the crime.
3) $\frac{-11}{9}$ ★ FIX! $-\frac{9}{11}$	The crime was not in the cafeteria.
4) $\frac{9}{11}$	Akeel did not commit the crime.